

Fats, Oil and Grease (F.O.G.)

Sanitary Sewer Overflows (SSO's)

The number one cause of blockages and SSO's in wastewater collection systems is discharges containing high concentrations of FOG from Food Service Establishments.

Reference: http://www.epa.gov/npdes/pubs/csosso_rtc_factsheet.pdf

In the Report to Congress, EPA estimates that between 23,000 and 75,000 SSOs occur each year in the United States, resulting in releases of between 3 billion and 10 billion gallons of untreated wastewater. These events take place throughout the United States.



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DEC 10 2004



Caption: Grease build up in a pipe



National Pretreatment Program

(40 CFR 403)

Controlling Fats, Oils, and Grease Discharges from Food Service Establishments



The National Pretreatment Program already provides the necessary regulatory tools and authority to local pretreatment programs for controlling interference problems. Under the provisions of Part 403.5(c)(1) & (2), in defined circumstances, **a POTW must establish specific local limits** for industrial users to guard against interference with the operation of the municipal treatment works. See 46 FR 9406 (28 January 1981).

Refer to the link

<http://www.pmairegs.com/sewer/>

to assist you in getting the proper requirements.

They have the backing of the EPA.

They are typically referred to as the AHJ.

Sewer Discharge Limits



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SEWER DISCHARGE LIMITS

FIND:

State/Province:

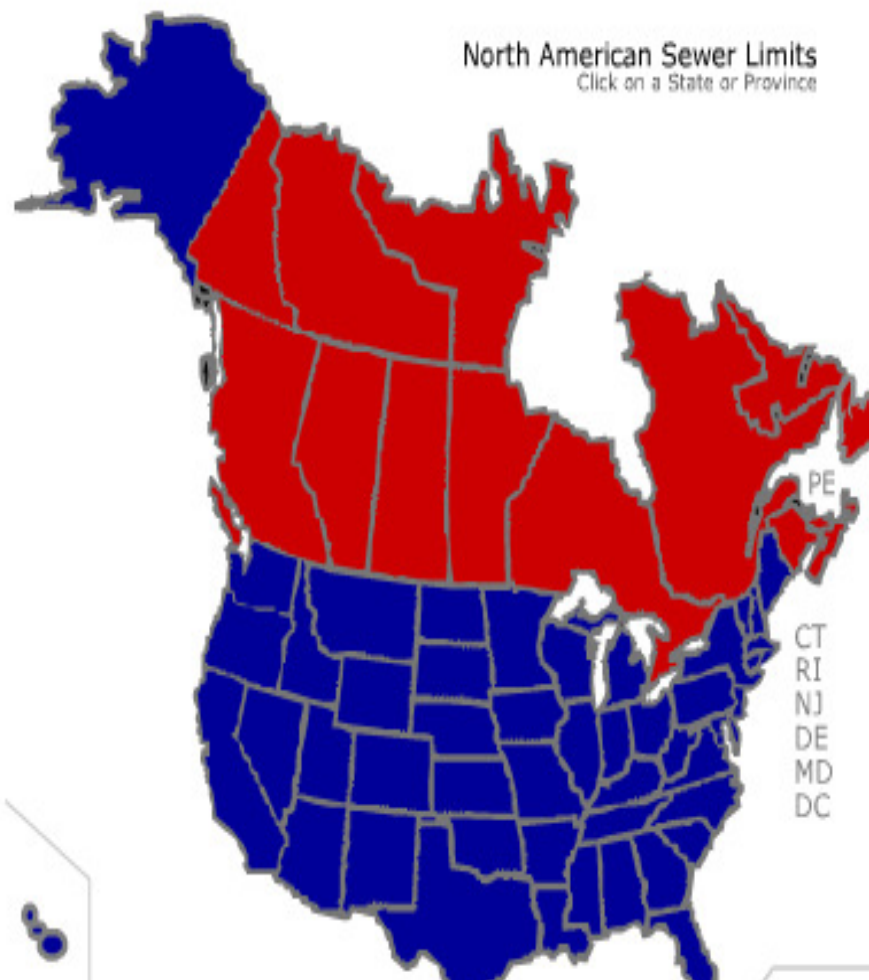
City/Town:

[Search](#)

Welcome to the PMA Sewer Discharge Limits database. Here you will find a comprehensive catalog of sewer discharge ordinances from all North American towns and cities. Please select your State/Province and/or enter the City of interest.

North American Sewer Limits

Click on a State or Province



Sewer Discharge Limits

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SEWER DISCHARGE LIMITS

FIND:

State/Province:

City/Town:

EssentialEHS

Search Results

10 cities found. Click on a city for ordinance details.

CITY	STATE	POP	BYLAW#	DATE
Concord	NH	41823	2292	2-8-1999
Derry	NH	20446	sewer use	2-7-1996
Dover	NH	28216	within data	
Hillsborough	NH	1826	NA	
Hudson	NH	7626	O97-01	8-26-1997
Manchester	NH	108871	NA	1-17-1995
Nashua	NH	87285	NA	1-1-1997
Newington	NH	900	sewer use	4-1-2000
Portsmouth	NH	21002	NA	
Rochester	NH	29654	sewer use	12-7-1999

State/Province:
▼

City/Town:

City/Town: **Manchester**
Address: City of Manchester
300 Winston Street
State: NH
Zip: 03103-6826
Population: 108871

Contact: Rick Cantu
Position: Industrial Pretreatment Supervisor
Phone:  603-624-6513 
Fax: 603-628-6234
Ordinance: NA
Ord. Date: 1-17-1995
Email:
Website: [Click here](#)



Restricted Discharges to Sanitary Sewer

Maximum Temp:
pH Low: 5.0
pH High: 11.5
Synthetic Oils/Grease: 100
Natural Oils/Grease: 350
Phosphorous (P):
Kjeldahl Nitrogen (KN):
Phenolics:
BOD: 350
Suspended Solids (SS): 350
COD:
Layers:
Dyes:
Aluminum (Al):

Manchester Ordinance Details:
§ 52.026 Prohibited Discharges.
No person shall discharge or cause to be discharged any of the following described water or wastes to any public sewer or drain:
(A) Any gasoline, benzene, naptha, fuel oil, or other flammable or explosive liquid, gas, or solid, or any substance which may generate or form any flammable, explosive, or combustible substance, fluid, gas, vapor, or mixture when combined with air, water, or other substances commonly found in sewers. This includes, but is not limited to, pollutants which cause an exceedance of 10% of the lower explosive limit (LEL) at any point in the POTW or wastes with a closed cup flash point in the POTW or wastes with a closed cup flash point of less than 140°F or 60°C, using the test method specified in 40 CFR 261.21.
(B) Any waters or wastewaters that either independently or by interaction with other wastewaters, pass through or cause

Exterior Grease Interceptor Design



National Pretreatment Program

(40 CFR 403)

Controlling Fats, Oils, and Grease Discharges from Food Service Establishments



Proper design, installation, and maintenance procedures are critical for these devices to control and capture the FOG. For example,

- ◆ Interceptor/collector devices must be designed and sized appropriately to allow FOG to cool and separate in a non-turbulent environment.
- ◆ FSE must be diligent in having their interceptor/collector devices serviced at regular intervals.

* *Ref. Report by Stone Environmental funded by the Wastewater Management Division, Dept. of Environmental Conservation
Vermont Agency of Natural Resources, Grant #EC-WW-05*

Several studies were reviewed which used observation and sampling of field conditions (See Appendix A). In these studies, several similarities stand out. The sample data indicates that undersized interceptors or traps performed very poorly when compared to effluent quality guidelines. Only properly sized, outdoor grease interceptors provided acceptable effluent quality. For example, the city of Austin, Texas study concluded that **retention time was the single most important factor in grease removal, and that large volume outdoor grease interceptors are required for acceptable retention times.**

Care must be taken when comparing studies and testing methods evaluating the efficiency of FOG removal. Actual wastewater usually contains various emulsifying chemicals, and the mixture is agitated before discharge to the trap or interceptor. While it would be impractical to evaluate all the variables that make up wastewater, it is important to remember that increasing the retention time (by increasing size) allows time for the FOG's to separate.

Effluent Discharge Criteria

Regulatory bodies set different effluent discharge limits all around the country. Presently, there is no one recognized maximum allowable level of AVFOG discharge, although the different values are relatively similar. These similarities can provide the basis for one standard that satisfies all regulatory bodies. (If your local authority is not listed here and it publishes a maximum discharge standard, please forward it to NPCA for consideration in future updates to this paper.)

Some examples of jurisdictions which have stated measurable maximum allowable grease discharge requirements are as follows:

U.S. E.P.A.	150mg/l
Dallas, Texas	200mg/l
Toronto, Ontario	150mg/l
Austin, Texas	200mg/l
Fort Wayne, Indiana	200mg/l
Kansas City, Mo.	200mg/l
Stockton, Ca.	200mg/l

What standards does my grease trap or grease interceptor have to meet?

Grease traps must meet specific standards for design, sizing and installation. These include the International Plumbing Code, PDI G-101, ASME A112.14.3 and, where applicable, ASME A112.14.3. Information about these standards is available from the Industrial Wastewater Pretreatment Program Office.

Grease interceptors should be designed by a professional engineer (P.E.) licensed by the **State of New Hampshire**. Standard design information is available from the Industrial Pretreatment Program Office for reference. Both the device itself and its installation must be approved by the Seabrook Sewer Superintendent. Grease interceptors must have either two or three chambers, a downstream sampling manhole, and a rated **retention time of at least 24 minutes at maximum flow**. They must also be configured so as to allow thorough cleaning and inspection without the need for confined space entry.

Both grease traps and grease interceptors must be installed in accordance with manufacturer's instructions.

Table 10-3
Gravity Grease Interceptor Sizing

DFUs (1)	Interceptor Volume (2)
8	500 gallons
21 (3)	750 gallons
35	1,000 gallons
90 (3)	1,250 gallons
172	1,500 gallons
216	2,000 gallons
307 (3)	2,500 gallons
342	3,000 gallons
428	4,000 gallons
576	5,000 gallons
720	7,500 gallons
2112	10,000 gallons
2640	15,000 gallons

Notes

(1) The maximum allowable DFUs plumbed to the kitchen drain lines that will be connected to the grease interceptor.

(2) This size is based on: the DFUs, the pipe size from this code; Table 7-5; Useful Tables for flow in half-full pipes (ref: *Mohinder Nayyar Piping Handbook*, 3rd Edition, 1992).

(3) Based on 30-minute retention time (ref.: Metcalf & Eddy, Inc. *Small and Decentralized Wastewater Management Systems*, 3rd Ed. 1998). Rounded up to nominal interceptor volume.

TABLE 10-3
Gravity Interceptor Sizing

<u>Pipe Dia. (1)</u>	<u>Full Pipe Flow (nominal) (2)</u>	<u>Interceptor size based on 30 minute retention time. (3) Rounded up to the next nominal size.</u>
<u>2"</u>	<u>19.44 gpm</u>	<u>750 gallons</u>
<u>3"</u>	<u>58.67 gpm</u>	<u>2000 gallons</u>
<u>4"</u>	<u>125.77 gpm</u>	<u>4000 gallons</u>
<u>5"</u>	<u>229.75 gpm</u>	<u>7500 gallons</u>
<u>6"</u>	<u>375.47 gpm</u>	<u>15000 gallons</u>

(1) For interceptor sizing by fixture capacity see the example below.

(2) "(.240)slope per foot based on Mannings formula with friction factor N=.012; CAST IRON SOIL PIPE AND FITTINGS HANDBOOK; Ch. 8. Flow Theory And Capacity; pp: 130 - 134 [Full Pipe]; Cast Iron Soil Pipe Institute (CISPI); 5959 Shallowford Road, Suite 419; Chattanooga, Tn. 37421.

(3) Based on 30 minute retention time (ref.) Metcalf & Eddy, Inc. 3rd Ed. Small and Decentralized Wastewater Management Systems, 1998) and rounded up to nominal interceptor volume.

GRAVITY INTERCEPTOR SIZING USING FIXTURE CAPACITY

ACCESS MANHOLES

**INTERMITTENT
BAFFLE**

**INLET
BAFFLE**

**GREASE
RETENTION**

LIQUID DEPTH

LIQUID LEVEL

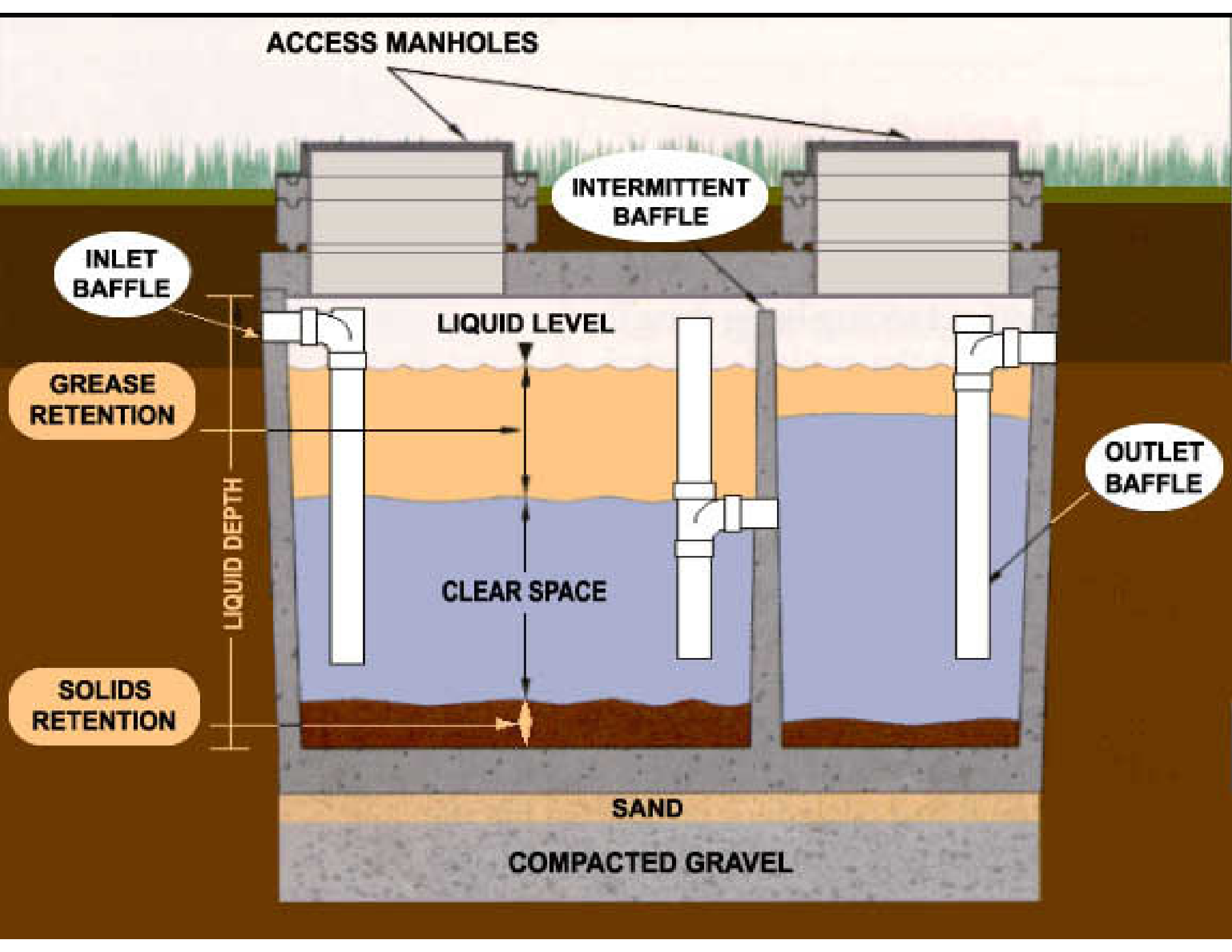
CLEAR SPACE

**SOLIDS
RETENTION**

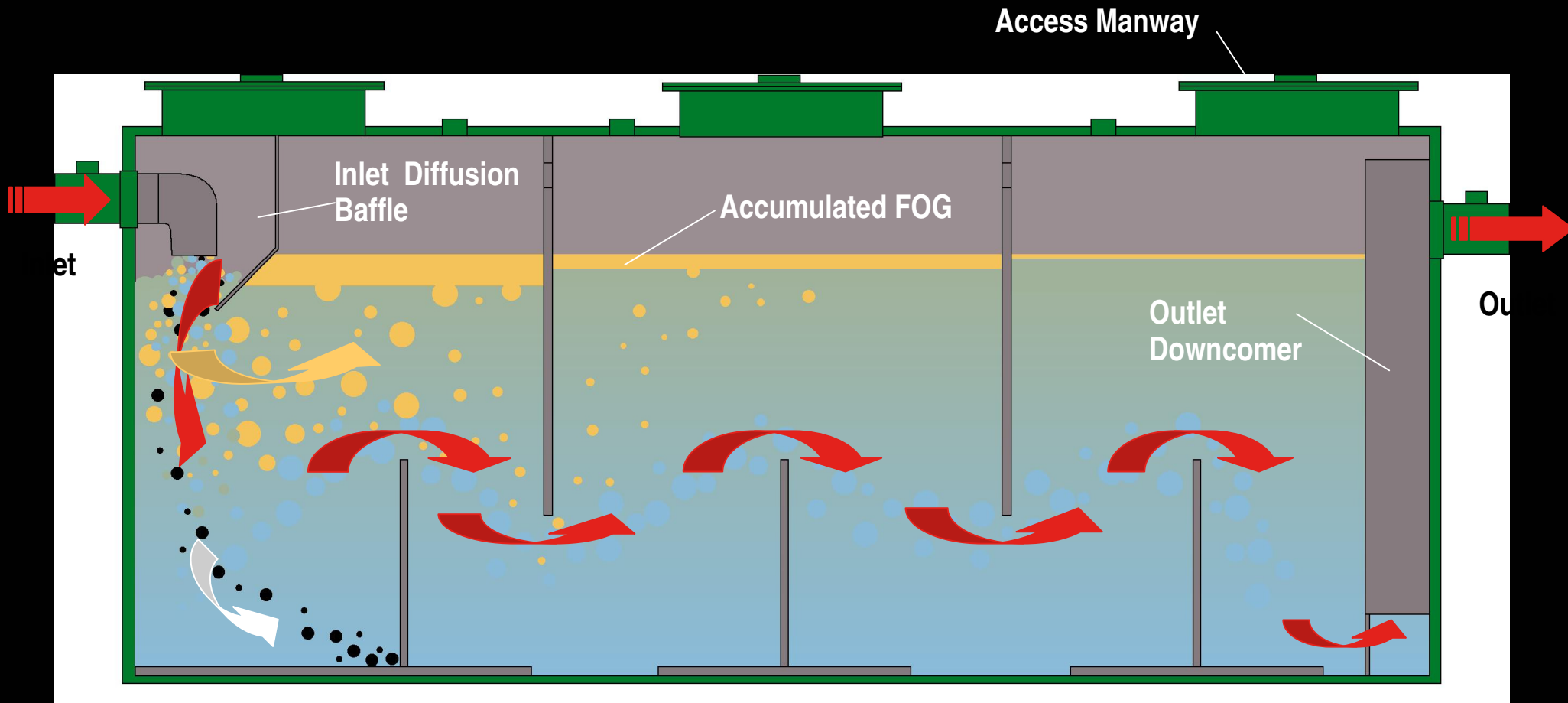
**OUTLET
BAFFLE**

SAND

COMPACTED GRAVEL

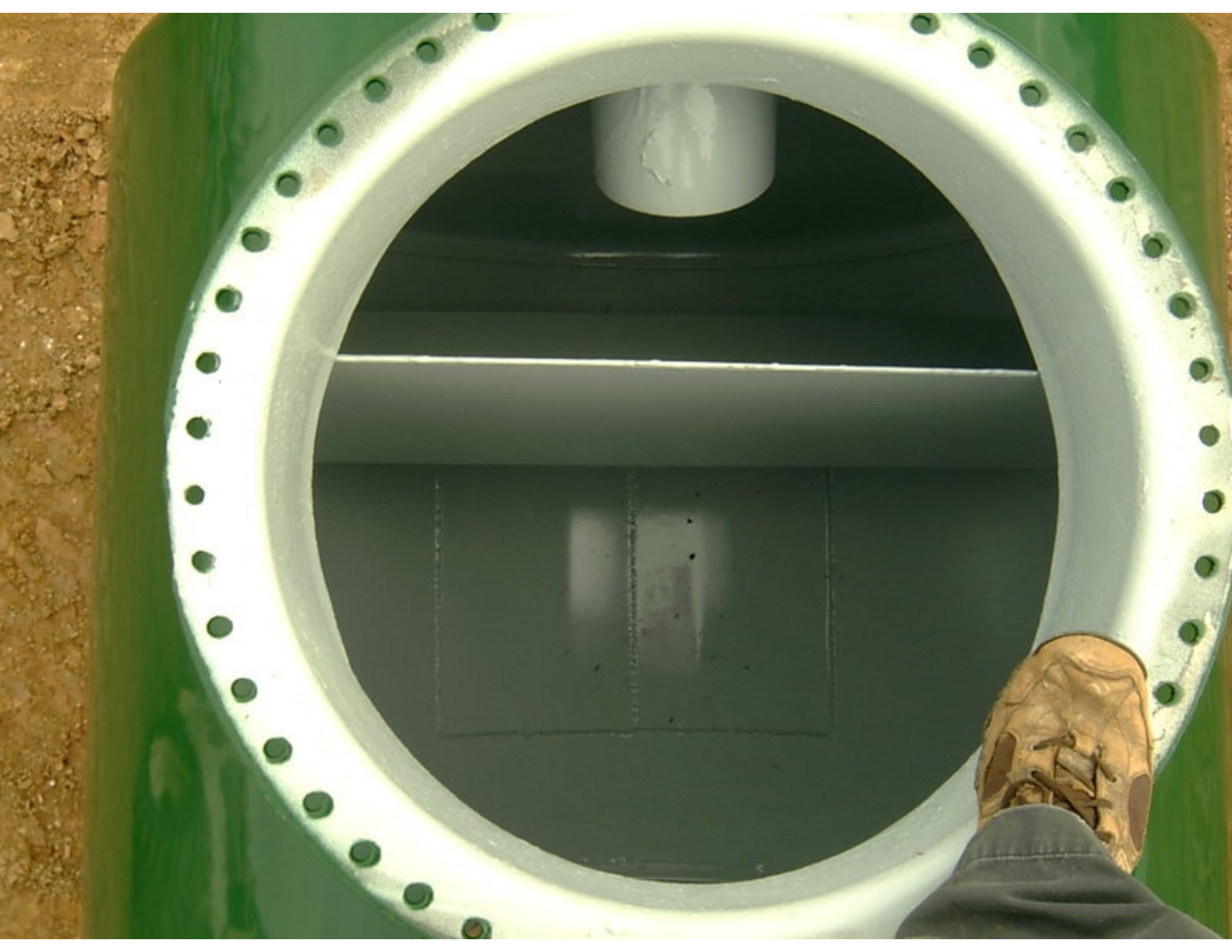


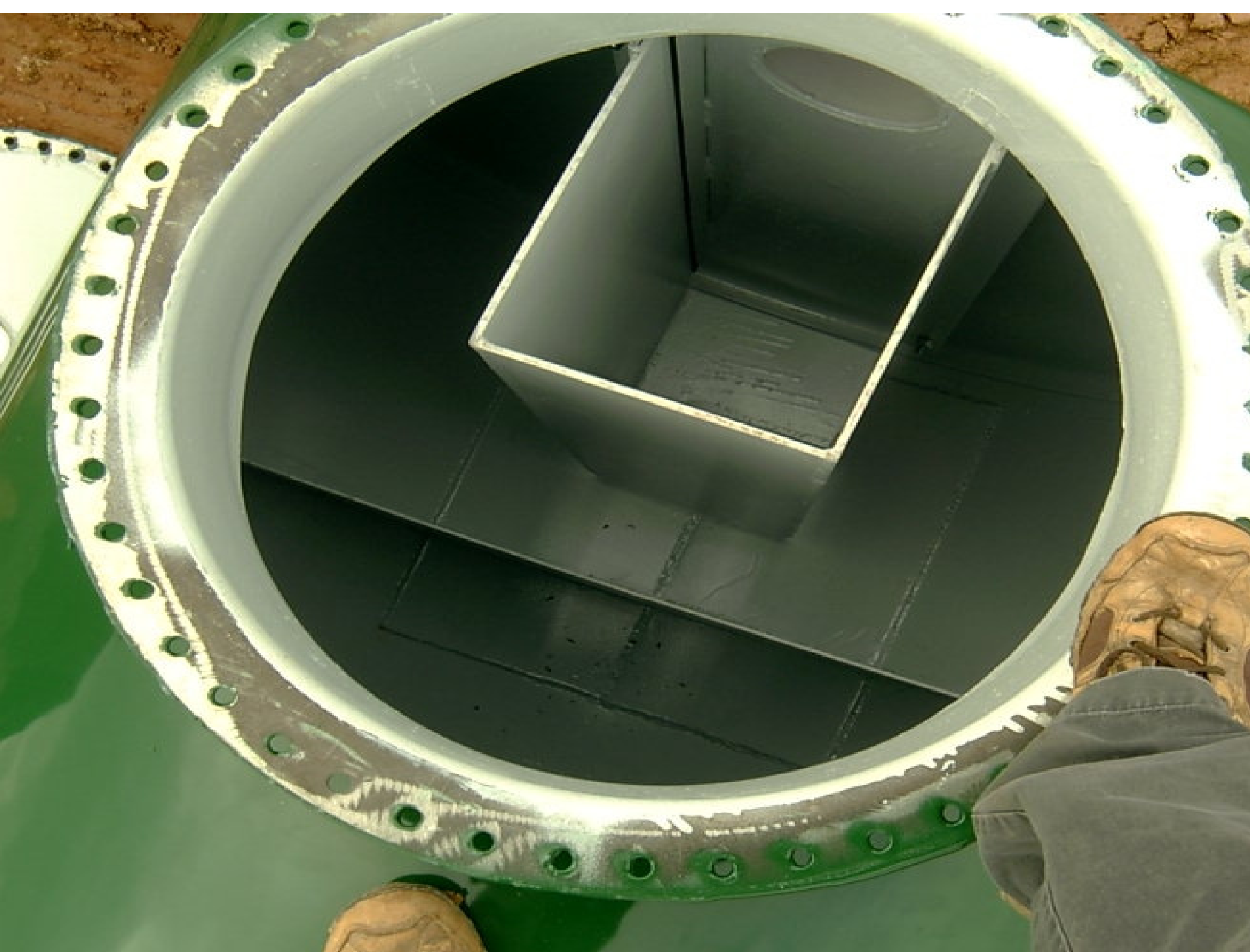
Passive Grease Interceptor Flow



Factory welded inlet, outlet, and baffles to eliminate grease interceptor mal-functions such as broken PVC inlet/outlet tees.









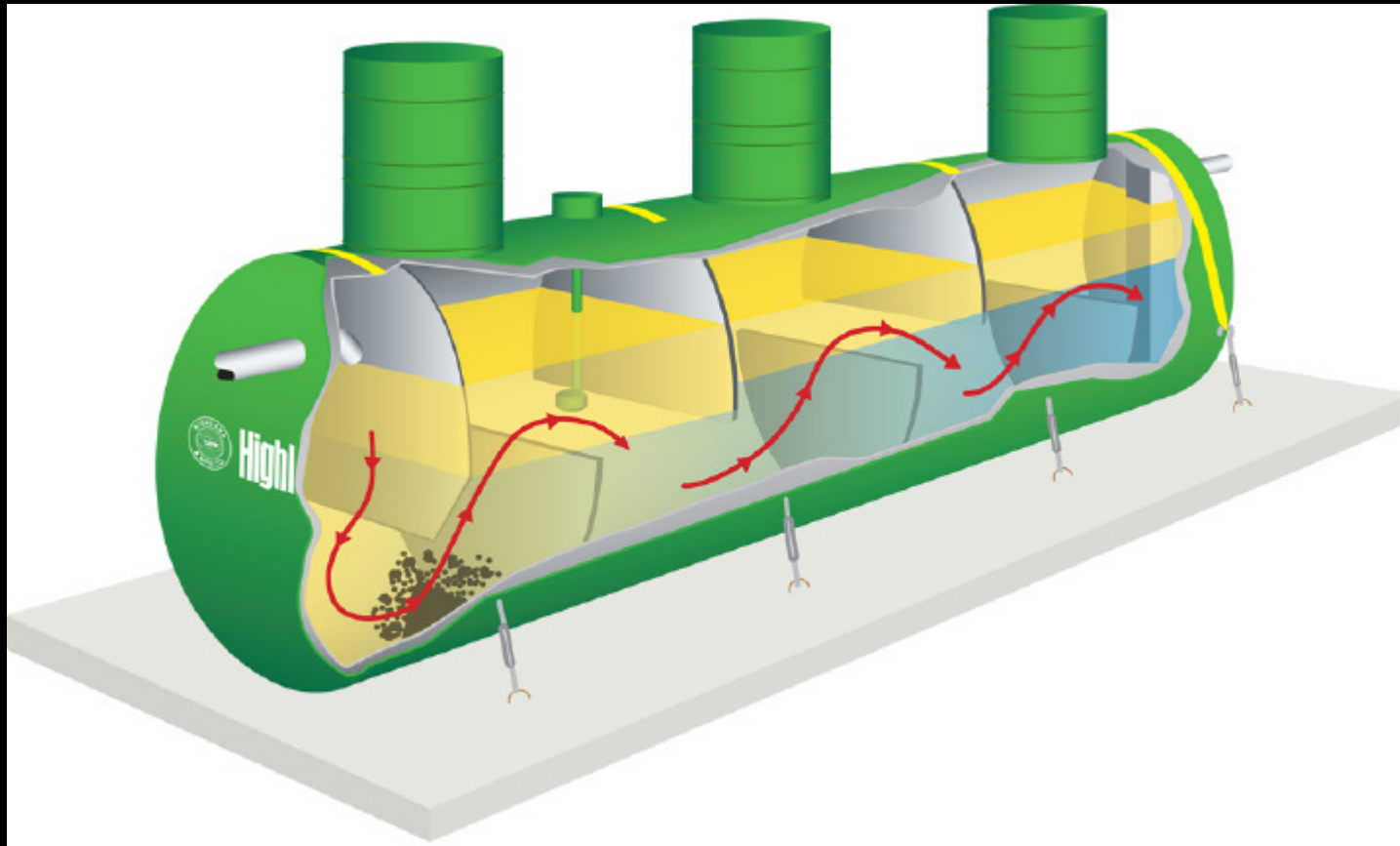
Caption: view of a grease trap outlet "T" showing the grease build up on the wall of the pipe











Engineered to retain wastewater long enough to allow fats, oils, and grease to cool down, congeal and separate, while allowing solids to settle.

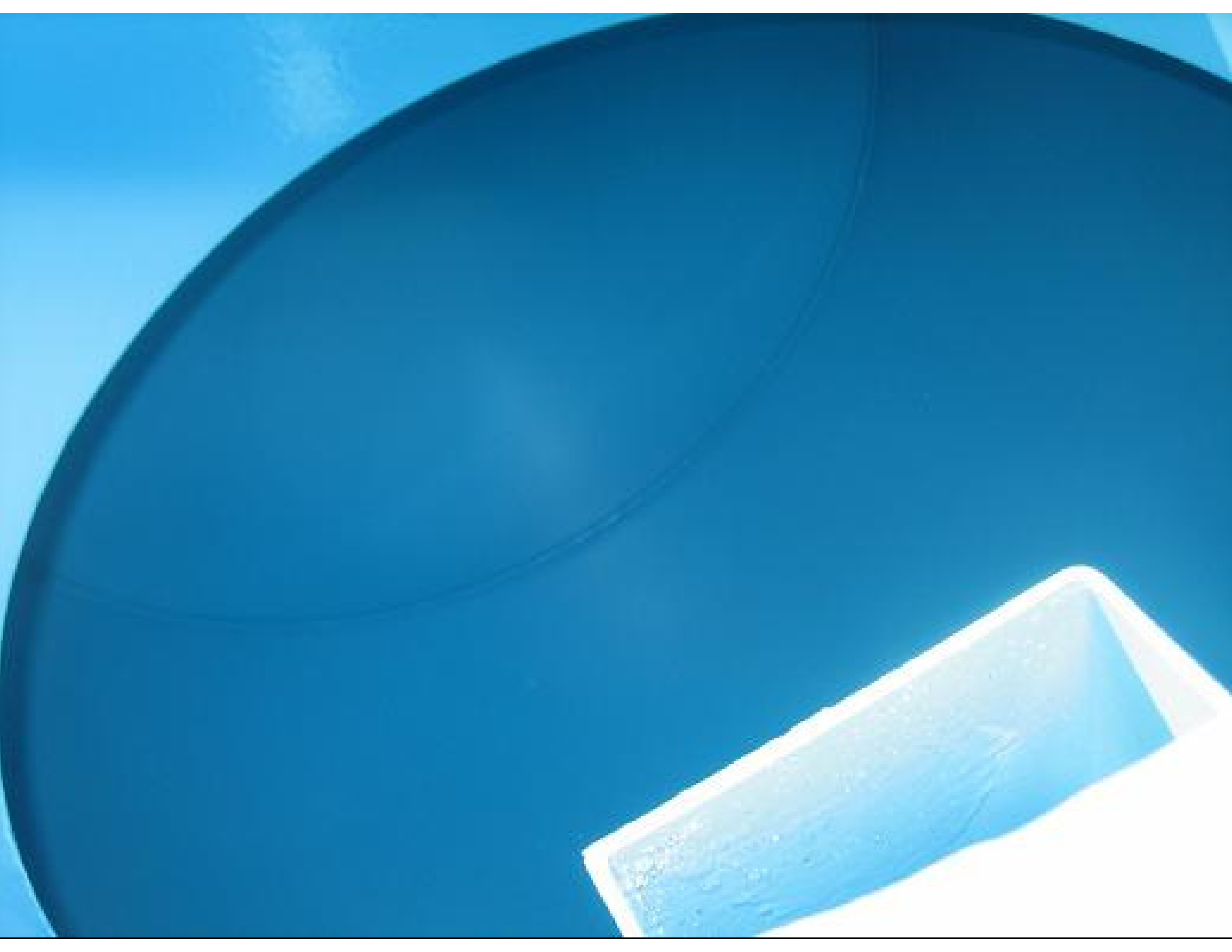




**HIGHGUARD PROTECTIVE COATING
SUBJECT TO UL-1746 STANDARD
EXTERNAL CORROSION PROTECTION
10 YEAR WARRANTY**



Heavy-duty interior high temperature, acid resistant coating to protect against hydrogen sulfide that commonly found in concrete grease interceptors.



Installation Photos















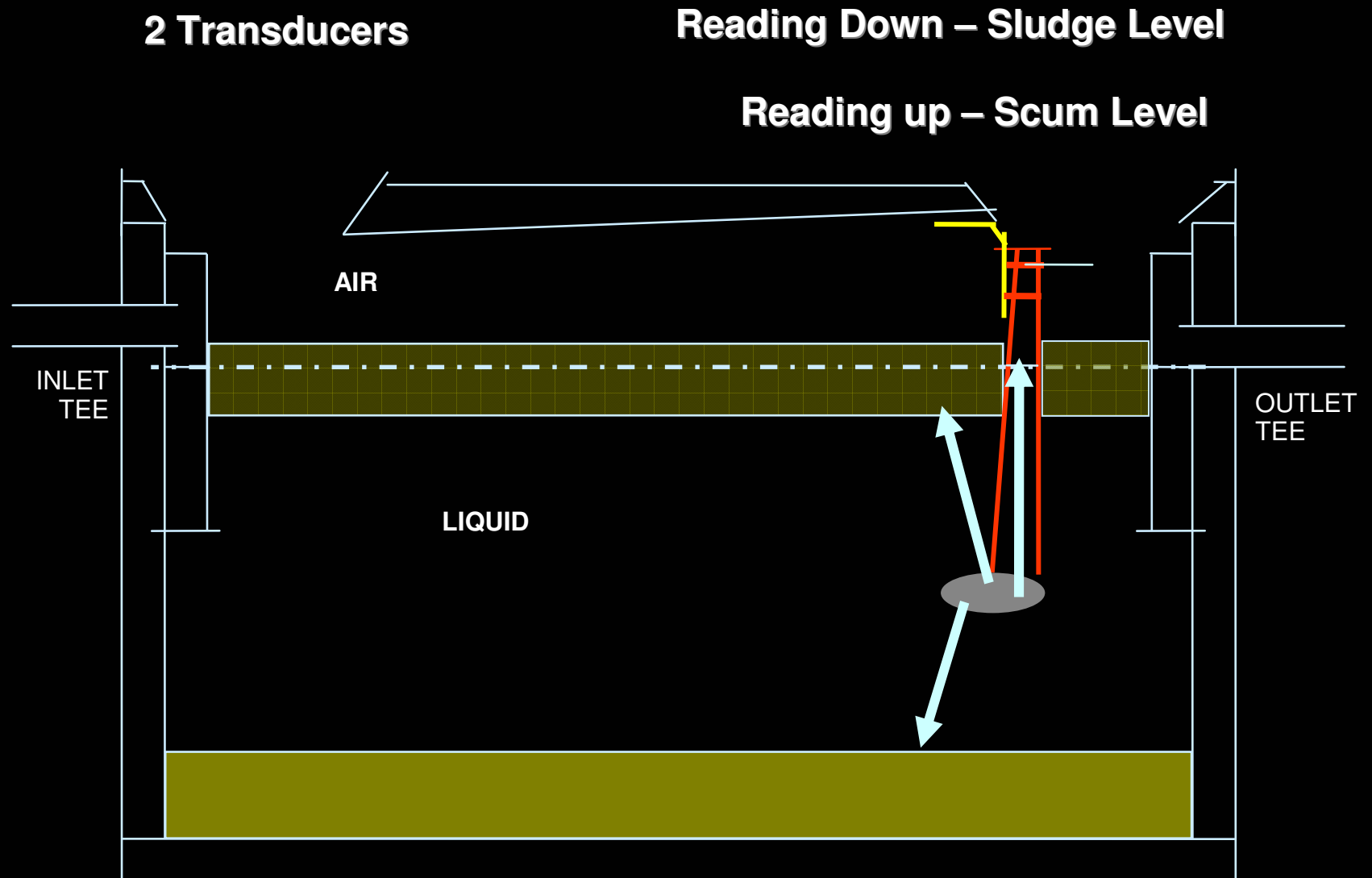






OPTIONS

How it Works



Venting



Engineered Systems















GREASE WASTE











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2010/01/11



Thank You

Chas Tevis
Highland Tank